

We Claim:

1. An article of manufacture comprising a hydrophobic polymeric substrate having an adherent, firmly attached hydrophilic coating of a graft copolymer of solubilized starch.

2. The article of Claim 1, wherein said graft copolymer is starch polyacrylonitrile.

3. The article of Claim 1, wherein said solubilized starch is totally solubilized.

4. The article of Claim 1, wherein said solubilized starch is jet cooked starch.

5. The article of Claim 1, wherein said solubilized starch consists essentially of starch or cereal flour.

6. The article of Claim 1, wherein said hydrophilic coating consists of nodules.

7. The article of Claim 1, wherein said coating has a thickness of approximately 1 micrometer or less.

8. The article of Claim 1, wherein said hydrophobic polymeric substrate is a film or sheet.

9. The article of Claim 1, wherein said hydrophobic polymeric substrate is a three-dimensional object.

10. The article of Claim 1, wherein said hydrophobic polymeric substrate is a material selected from the group consisting of polyethylene, polypropylene, polystyrene, polyester, and polyamide.

11. The article of Claim 1, wherein said hydrophobic polymeric substrate is a material comprising polyethylene.

12. The article of Claim 1, wherein said starch is selected from the group of corn starch, wheat starch, rice starch, sorghum starch, potato starch, cassava starch, tapioca starch and flours comprising said starches.

13. The article of Claim 1, wherein said starch is selected from the group of waxy starch, high amylose starch, and a starch comprising about 25% amylose by weight.

14. The article of Claim 1, wherein said hydrophilic coating on said polymeric substrate is present in an amount of at least about 0.01 mg starch/cm² of polymeric substrate.

15. The article of Claim 1, wherein said hydrophilic coating on said polymeric substrate is present in an amount of at least about 0.02 mg starch/cm² of polymeric substrate.

16. The article of Claim 1, wherein said hydrophilic coating on said polymeric substrate is present in an amount of less than about 1 mg starch/cm² of polymeric substrate.

17. The article of Claim 1, wherein said hydrophilic coating on said polymeric substrate is present in an amount of less than about 0.08 mg starch/cm² of polymeric substrate.

18. A method for rendering hydrophilic the surface of a hydrophobic polymeric substrate comprising the steps:

- a. contacting said substrate with a solubilized starch at a temperature above the gelatinization temperature of the starch; and
- b. holding said substrate in contact with the solubilized starch until the temperature of the starch cools to below the gelatinization temperature, whereby said starch forms on said substrate an adherent, firmly attached hydrophilic coating having a thickness of approximately 1 micrometer or less; and
- c. reacting the starch in said hydrophilic coating with a synthetic monomer.

19. The method of Claim 18, wherein said solubilized starch is in aqueous solution.

20. The method of Claim 19, wherein the starch concentration of said solution is in the range of about 0.5-5%

by weight.

21. The method of Claim 19, wherein said solubilized starch is jet-cooked starch.

22. The method of Claim 18, wherein said hydrophobic polymeric substrate is a material selected from the group consisting of polyethylene, polypropylene, polystyrene, polyester, and polyamide.

23. The method of Claim 18, wherein said hydrophobic polymeric substrate is a material comprising polyethylene.

24. The method of Claim 18, wherein said starch is selected from the group of corn starch, wheat starch, rice starch, sorghum starch, potato starch, cassava starch, tapioca starch and flours thereof.

25. The method of Claim 18, wherein said starch is selected from the group of waxy starch, high amylose starch, and a starch comprising about 25% amylose by weight.

26. The method of Claim 18, wherein said monomer is acrylonitrile.

27. The method of Claim 18, wherein said reacting in step (c) takes place in the presence of a ceric ammonium nitrate-nitric

acid initiator.